The Origin of the Alphabet: THE MYTH OF PALAMEDES GAMES, COMPUTERS, ...
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The Origin of the Alphabet

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Some current scientific interests—game theory, computers, social invention—may hear echoes from the beginning of recorded time in Dr. Stecchini's preliminary inquiry into the origins of the alphabet. Some unheralded Sumerian grammarian probably devised a primitive alphabet as a divining, abacus-like instrument formed in a sixteen-letter square, as reconstructed in the cover drawing. Its purpose was to allow divine voices to "speak" in the language of the land. The author resides at Princeton, N.J., where he is completing his work on the HISTORY OF MEASURE. *A further article on his findings will appear in the March issue of ABS.*

My purpose here is to present a simple but significant discovery. It may first be summarized: All alphabets derive from a basic alphabet of sixteen letters arranged according to a rational principle in a square with letters on each side. This alphabet in turn derives from the simplest form of abacus, the pentegramma of five lines enclosing four spaces divided into four positions. All early computing devices were used as an instrument of divination. The throw of a pair of dice with four faces (as have astragali and square sticks) identifies a position on the abacus pentegramma.

In using the computing devices as an instrument of divination, an effort was made to obtain specific answers. At some point the idea was conceived of letting the oracular device talk (the ouija board); some grammarian was able to decompose the spoken language into phonetic elements.

The inner structure of the primitive alphabet suggests that the language for which it was conceived was Sumerian, the first language ever written so far as we know today. Cuneiform writing as well as Egyptian hieroglyphs presuppose the existence of the alphabet. The first stimulus to writing was given by the necessity of noting down numbers of calculations; the alphabet provided the transition from the writing of numbers to the writing of words.

THE MYTH OF PALAMEDES

In my Harvard doctoral dissertation (19[illegible]6) I discussed the myth of Palamedes, the hero to whom the Greeks ascribed the invention of backgammon, abacus, dice, signaling fires, musical scales, numbers, measures, and the letters of the alphabet. As I dealt with the Greek dramas and philosophical essays concerning the myth, I opened a new Pandora's box. Since these devices are interrelated I could not deal with them in isolation. As I followed for a decade the diffusion of measures from Sumeria to Greece and beyond, I came also upon material for the study of the alphabet, and for the study of musical scales and poetic meters. Moreover, along the road I examined much ancient material on chronology, and I believe now that history both in the Orient and in Greece was originally connected with astrology. Even in the invention and analysis of history the ancients tried to shape the flow of experience into simple repetitive patterns.

In tracing the common element of the Greek combinatory devices I found that there was an original Greek alphabet of sixteen letters placed in four rows of four letters. Since I had become interested in Palamedes because he was associated with the official reference standard of Greek measures kept at the Temple of Hera near Argos, I concentrated first of all upon the history of measures. The study of measures that I am preparing for publication demonstrates that the ancients were interested in subtle combinatory structures and that the center of diffusion of the concern with these structural patterns was Sumeria, or, better, an unknown civilization that preceded the Sumerian one.

The investigation of measures indicates that when writing appeared in Mesopotamia and in Egypt, a complex system linking length, volume, weight, and the calender had already been elaborated. This system could not have been developed if some method of numerical notation had not existed. The texts in fact indicate that a high level of mathematical achievement had been attained when records began to be kept. What we consider the beginning of writing must actually have been the beginning of writing for the sake of permanent record.

Studies now being pursued by Hertha von Dechend indicate that advanced astronomical information had been gathered before the origin of writing; written documents indicate that the observations were initiated in the fourth millenium B.C. At the same time, she is showing that very early myths have a much more precise and meaningful structure than it has been believed.

All this suggests a mystery. How could a high level of intellectual civilization develop before the origin of writing? The study of the alphabet could provide an explanation. Before writing, intellectual activity was expressed by the construction of geometric and mathematical patterns; the development of literary expression reduced the concern with the formulation of combinatory structures. Poetry developed before prose, because poetry is closer to the original formalized patterns. Today the science of magic squares is of no use except to those who are interested in textiles; but the age that preceded the invention of writing developed the art of weaving. Ancient civilization grew within the framework of an original high development of combinatory skills. The Greeks expressed this idea by constructing the myth of Palamedes as the originator of scientific culture. Most historians, because of their literary training, have been blind to the importance of *ars combinatoria* in ancient thought. The study of the alphabet makes this point in a simple and evident way.

GAMES, COMPUTERS, AND DIVINATION

Measures are intimately connected with computing devices. The simplest of the computing devices is the abacus, but there were others more complex. For instance, some Mesopotamian and Egyptian divisions of the units presuppose a computing device, called *diagrammismos* in Greek, which is a primitive slide rule that performs multiplications and divisions by logarithms with base 2. This device was used as a game in Rome and called *ludus duodecim litterarum*. By analyzing games, such as several varieties of checkers or chess, it is possible to reconstruct a number of ancient computing devices, the existence of which is indicated either by recorded computations or by archeological findings.

Games are so closely connected with computing devices that it is difficult to tell which came first. The computing devices of which I speak consist essentially of a geometric pattern on which there are placed counters or symbols. All the computing devices were used as an instrument of divination.

The linguist J. G. Février in his authoritative *Histoire de l'écriture* declares: "*Nous touchons ici à un point obscur, délicat. Il existe certainement un rapport entre la divination et l'écriture, encore qu'il soit malaisé de le définir.*" Given the mass of ancient references to the relation between writing and divination, the answer should not be as difficult as Février makes it. I found it when I asked myself the simple question: why are the letters of the alphabet in a given order? Even though a specific order of the letters is an essential feature of all alphabets, there is only one scholar who has tried to explain it: the archeologist Sir Flinders Petrie. Since he had specialized in the study of ancient measures, he had the proper foundation for approaching the problem correctly, but he stopped short of a full explanation because he was avowedly a poor linguist.

There is an immense number of Greek and Hebrew texts connecting the letters of the alphabet with numbers, but all this material has been up to now dismissed as mystical nonsense. Only Robert Graves in *The White Goddess* has dared to touch upon material of this sort, but he has dealt for the most part with secondary developments of the magical meaning of the alphabet and has neglected the connection with mathematics. However, in spite of his limited factual information he has had insights that can be proved correct by a more systematic presentation. He has recognized the significance of the Greek myth of Palamedes and has used it to explain the ogamic alphabet of the Celts.

The patterns used for the construction of computing devices, mathematical games, and alphabets also were used to organize all sorts of information, as, for instance, astronomical data. Robert Graves has called to attention one aspect of this procedure by noticing that the scheme of the alphabets was used to classify stones, plants, and medicinal herbs. One of the methods used to organize geographical information, and to consult the divinity about which direction to take, was the roulette wheel; I have determined that the roulette wheel with 36 positions or letters was the oracular device employed at the sanctuary of Delphi in Greece. The approach of the ancients is echoed in the *Ars magna* of Raymond Lull, whose work was highly valued during the Middle Ages and the Renaissance, but is little understood today. Lull offered a pattern of sixteen letters to be used in organizing any kind of knowledge. On the basis of Lull's work, Leibnitz wrote the *Dissertatio de arte combinatoria*, which was the starting point of his plan for the construction of an universal arithmetic to be used in combining simple concepts into complex ones in all fields of thought.

Moving backwards from several known alphabets, I have reconstructed the original alphabet of four vowels and twelve consonants and found that it fits the phonetics of the Sumerian language. At the beginning of the century the Sumerologist Friedrich Delitzsch, without suspecting a connection with the alphabet, suggested that cuneiform writing developed from sixteen basic signs and observed that these signs have some association with mathematics. That hieroglyphic writing presupposes the knowledge of the alphabet is evident, since it consists of alphabetic signs plus signs referring to groups of two or three letters and signs referring to specific entities.

Writing developed from an effort to exploit to the maximum the methods of divination based on mathematical games. The connection between writing and divination has been established for China. Card games are a method of divination that aims at obtaining complex answers; references to the connection between cards and alphabet occur here and there in the specialized literature. Tarot cards, which are of Mesopotamian origin, reveal the effort to obtain an answer in the form of specific pictures; the pictures are interpreted combined into patterns. (An investigation of the original scientific meaning of tarot cards has been started without mutual knowledge by Phyllis Ackerman in the United States and by Hertha von Dechend in Germany.) More specific answers could be obtained by letting the divination device speak; this became possible when it was recognized that the spoken language could be decomposed into a limited number of phonemes.

A great many ancient texts are lumped together and dismissed as mysticism of letters and numbers by scholars who are not aware of the nature of mathematics. Today we know that symbols, permutations, groups, and probability theory are related topics. Once it is granted that writing was connected with divination, it is necessary to state correctly the nature of divination. Divination did not consist merely in uttering foolish or cheating; it was based on the assumption that the world has hidden structure based on topological structures, numbers, and probability. The fact that checkerboards, cards, and dice were instruments of divination makes this clear.

CONDITIONS CAUSING ALPHABETIC VARIATION

The Sumerian language could be adequately represented by sixteen signs, but for some reason or other it was preferred to develop alphabetic writing into an ideographic script. Possibly the fact that there were different dialects of Sumerian made a phonetic writing undesirable; the difference of dialects makes phonetic writing impractical in China today. It may be that the alphabet began to be used in isolation when it was acquired, at later times, by marginal cultures that did not have that tradition of a highly formalized structuring of thought that had led to its very invention. Problems such as the reason why the Egyptians added a great number of signs to an alphabet that would have been perfectly adequate to writing their language, could be explained by the mental habits of people accustomed to organizing their ideas in terms of established symbols and of combinatory devices. They may have sensed that alphabetic writing favors intensional language, whereas their earlier practices may have made them realize the advantage of extensional language for the testing of the factual value of statements.

The connection between writing and mnemotechny must also be considered. Writing was developed as an aid to, and a substitute for, memory, but the art of memorization remained an important element of culture up to the invention of the printing press. Alphabetic signs were used as mnemonic devices. The essence of all mnemonic techniques is the establishment of a series of reference entities, such as ten colors, twelve animals, or twenty parts of the human body, with which the terms to be remembered are brought into one-to-one correspondence. Lists of this type could explain the groups of signs employed in hieroglyphic writing.

Recently anthropologists have called to attention an apparently paradoxical aspect of diffusion: in the area where an institution was created, the same stimulus that caused the initial step may bring about new developments, whereas more primitive forms may be found the more one is removed from the center of origin. In the Mesopotamian area the drive towards writing was so active that the original pattern was soon obliterated. This pattern remained more visible in Egypt. The Greek alphabet is more archaic in its structure than the Semitic alphabets; I was able to reconstruct the original scheme of sixteen letters from the Greek material. Germanic runes are even closer to the original form, and the ogamic writing of Ireland is the most primitive of all. When the alphabet is followed to the East, one meets, for instance, with a Pehlevi alphabet of sixteen letters, but finds the most revealing alphabet in Korea.

In the Hebrew alphabet there are 22 letters, divided into two parallel rows of 11 letters, because the Hebrews used measures based on the factor 11 and had a corresponding computing device. The most complete single source of information on ancient measures is the treatise on biblical measures written by St. Epiphanius, the friend and collaborator of St. Jerome; the main point of this treatise is to show the connection between the 22 letters of the alphabet and the measure of 22 points that is the key to the Hebrew metric system. Nevertheless, when the first edition of the full text of St. Epiphanius was published by the Oriental Institute of the University of Chicago, all this material was dismissed in the preface as the idle prating of an "addlepated pedant."

The Alphabet's Cryptographic Features

The origin of the alphabet would have been discovered earlier if scholars had paid attention to the Hebrew, Greek, German, and Gaelic texts that consider the alphabet more a system of cryptography than of clear communication. The possibility of transposing the letters is essential to the structure of the alphabet; the analysis of the method of transposition indicates how the letters were related to each other. Hebrew sources list types of transposition, because an important element of the rabbinical method of interpreting the Old Testament is based on the assumption that passages with an overt meaning have a hidden meaning to be obtained by a cipher. Even the most skeptical scholars accept that an occasional use of the cipher occurs in the biblical text. For instance, it is certain that when the Old Testament says Sheshach it means Babel and when it says Zimchi it means Elam, ordering the alphabet from the last letter to the first.

For the love of primitivism, scholars have overlooked the fact that discovery of writing was a tremendous intellectual feat. Often the origin of writing is explained by referring to the drawings of children, though scholars have had to admit that Egyptian and Chinese writings are deliberate, organic constructions. But the instinctual origin of writing is saved by maintaining that Egyptian and Chinese writings were developed by people who had seen writing already developed by the Sumerians. Sumerian writing at least would be a spontaneous product, some felt, but those who make this point reveal a short memory.

When the first sketch of Sumerian grammar was published in 1874, Joseph Halévy denied that there was a Sumerian language and argued that it was a matter of a system of cryptography. In the fiery debates that followed, Halévy won over almost every specialist; for twenty years, Julius Oppert was left practically alone to defend the existence of a Sumerian language and a Sumerian civilization. When Oppert died in 1905 there were still supporters of Halévy in major academic positions. Today Orientalists pay almost no attention to the "Halévy episode."

That is unfortunate, for, even though Halévy was more a demagogue than a scholar, he won the support of the academic world because he had correctly pointed out some facts concerning the cryptographic traits of the invention. The error of those who first accepted Halévy's views and then dismissed them totally, when the translation of a large body of literature proved beyond any doubt the existence of a Sumerian language, was in not recognizing that a conscious and artificial structuring should be expected in a newly invented system of writing. Galileo was intuitively closer to the truth when he declared:

> "But above all other stupendous inventions, what sublimity of mind must have been his who conceived how to communicate his most secret thoughts to any other person, though very far distant either in time and place, speaking with those who are in the Indies, speaking to those who are not yet born, nor shall be this thousand, or ten thousand years? And how easily, just by throwing together twenty lowly characters upon a paper! Let this be the seal of all admirable inventions of man and the close of our discourse for this day."[1]

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[1] *Dialogue on the Great World Systems*, end of First Day.